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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/764,802	01/26/2004	Michael E. Herbstreit	BING-1-1050	9769

25315 7590 06/28/2005

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EXAMINER	
CHERRY, STEPHEN J	
ART UNIT	**PAPER NUMBER**
2863	

DATE MAILED: 06/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

H:A

Office Action Summary	Application No.	Applicant(s)	
	10/764,802	HERBSTREIT ET AL.	
	Examiner	Art Unit	
	Stephen J. Cherry	2863	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 March 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-28* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) *1,4,5,8,13-21,24 and 26* is/are rejected.

7)☒ Claim(s) *1-28* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *14 March 2005* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *6-3-2004*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the fuel tank including tank geometry and sensor configuration, fuel plane intersection, wetted volume, etc. must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

Claims 1-28 are objected to because of the following informalities:

1. The claims describe determining the volume or liquid present in a tank, while the specification, at page 3, line 28, discloses an invention directed at determining characteristics of a tank through a simulation where the physical tank and fuel are not present.

2. In each of independent claims 1, 13, and 21, "the wetted volumes" lacks antecedent basis because the recitation of "a wetted volume" is interpreted to include only a singular volume. Thus, it is not possible to determine whether applicant intends to claim a single or multiple wetted volumes.

3. In claim 8, "the computed errors" lacks antecedent basis.

Appropriate correction is required.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 13-20 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. The claims describe a computer program product, without a recitation of a computer readable medium, thereby describing non-statutory subject matter (see MPEP 2106 IV. B. 1. (a)).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 4, 8, 13, 16, 18, 21, 24, and 26 rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent 6,715,349 to Atkinson.

Claim 1 recites, as disclosed by Atkinson:

> 1. A method of determining a volume of liquid within a tank during motion, comprising: receiving tank geometry information ('349, col. 3, line 26); receiving sensor configuration information ('326, col. 3, line 26); receiving tank motion information ('349, col. 2, line 47); computing a fuel-plane-to-sensor intersection for at least one tank position based on the tank motion information ('349, col. 2, line 47); computing a wetted volume at every fuel-plane-to-sensor intersection for each sensor location based on the sensor configuration information ('349, col. 3, line 26); and computing a fuel quantity at every fuel-plane-to-sensor intersection based on a sum of the wetted volumes ('349, col. 3, line 30).

Claim 4 recites, as disclosed by Atkinson:

> 4. The method of Claim 1 wherein receiving tank geometry information includes receiving height-to-volume values ('349, col. 3, line 25).

Claim 8 recites, as disclosed by Atkinson:

8. The method of Claim 1, further comprising determining a non-linearity condition of a fuel gauging system based on one or more of the computed errors ('349, col. 3, line 6, faulty probe).

Claim 13 recites, as disclosed by Atkinson:

13. A computer program product for determining a volume of liquid within a tank during motion, comprising:

a first computer program portion adapted to receive tank geometry information ('349, col. 3, line 26, program executed by gauging unit, 11); a second computer program portion adapted receive sensor configuration information receiving sensor configuration information ('326, col. 3, line 26); a third computer program portion adapted to receive tank motion information ('349, col. 2, line 47); a fourth computer program portion adapted to compute a fuel-plane-to-sensor intersection for at least one tank position based on the tank motion information ('349, col. 3, line 26); a fifth computer program portion adapted to compute a wetted volume at every fuelplane-to-sensor intersection for each sensor location based on the sensor configuration information ('349, col. 3, line 30); and a sixth computer program portion adapted to compute a fuel quantity at every fuelplane-to-sensor intersection based on a sum of the wetted volumes ('349, col. 3, line 30).

Claim 16 recites, as disclosed by Atkinson:

16. The computer program product of Claim 13, wherein the first computer program portion is adapted to receive height-to-volume values ('349, col. 3, line 25).

Claim 18 recites, as disclosed by Atkinson:

18. The computer program product of Claim 13, further comprising a seventh computer program portion adapted to determine a non-linearity condition of a fuel gauging system based on one or more of the computed errors ('349, col. 3, line 6, faulty probe).

Claim 21 recites, as disclosed by Atkinson:

21. A system for determining a volume of liquid within a tank during motion, comprising: a control component; an input/output device coupled to receive vibrational data('349, fig. 1, data from 12 to 11); and a processor arranged to analyze the vibrational data ('349, 11), the processor including: a first portion adapted to receive tank geometry information ('349, col. 3, line 26); a program portion adapted receive sensor configuration information ('326, col. 3, line 26); a third portion adapted to receive tank motion information ('349, col. 2, line 47); a fourth portion adapted to compute a fuel-plane-to-sensor intersection for at least one tank position based on the tank motion information ('349, col. 2, line 47); a fifth portion adapted to compute a wetted volume at every fuelplane-to-sensor intersection for each sensor location based on the sensor configuration information ('349, col. 3, line 30); and a sixth portion adapted

to compute a fuel quantity at every fuelplane-to-sensor intersection based on a sum of the wetted volumes ('349, col. 3, line 30).

Claim 24 recites, as disclosed by Atkinson:

24. The system of Claim 21, wherein the first portion is adapted to receive height-to-volume values ('349, col. 3, line 25).

Claim 26 recites, as disclosed by Atkinson:

26. The system of Claim 21, wherein the processor further includes a seventh portion adapted to determine a non-linearity condition of a fuel gauging system based on one or more of the computed errors ('349, col. 3, line 6, faulty probe).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,715,349 to Atkinson in view of U.S. Patent 4,258,422 to Dougherty et al.

The claim recites, as disclosed by Atkinson:

receiving tank geometry information ('349, col. 3, line 26); receiving sensor configuration information ('326, col. 3, line 26); receiving tank motion

information ('349, col. 2, line 47); computing a fuel-plane-to-sensor intersection for at least one tank position based on the tank motion information ('349, col. 2, line 47); computing a wetted volume at every fuel-plane-to-sensor intersection for each sensor location based on the sensor configuration information ('349, col. 3, line 26); and computing a fuel quantity at every fuel-plane-to-sensor intersection based on a sum of the wetted volumes ('349, col. 3, line 30).

However, Atkinson does not disclose how the height to volume values are entered into gauging unit, 11.

The claim further recites, receiving an input file of height-to-volume values from a storage device ('422, col. 8, line 62).

Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the data of Dougherty with the fluid gauging system of Atkinson to allow the storage of information for a large number of attitudes of the fuel tank.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. U.S. Patent 4,258,422 to Dougherty et al, at col. 8, line 62 discloses simulating fuel tank wetted sensing length.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen J. Cherry whose telephone number is (571) 272-2272. The examiner can normally be reached on M-F 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Barlow can be reached on (571) 272-2269. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SJC

MICHAEL NGHIEM
PRIMARY EXAMINER